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ABSTRACT

It is proposed that the breadth or scope of high quality effort by college students to use facilities and opportunities on campus is a potential index of the quality of undergraduate education. In 1979 and 1980, responses to quality-of-effort measures (generally, student activity checklists) were obtained from over 9,000 undergraduates at 30 four-year colleges and universities. An index of the breadth or scope of high quality effort was derived from students' scores on twelve of the effort scales. Scores spanned the full range from 0 to 12 (the upper limit indicating that the student spends high quality effort on all 12 of the topics concerned). One-fourth had a score of nine or above, and about the same proportion had a score of three or lower. Within the four types of institutions studied (comprehensive colleges and universities, research universities, highly selective liberal arts, and less selective liberal arts), the relationships between breadth scores and student characteristics are consistent. The breadth score distributions were compared with a measure of student outcomes, the number of outcomes or objectives in which the percent of students report substantial progress is higher than the overall average in the study. The comparison shows the breadth of high quality effort to be clearly associated with the breadth of high quality outcomes. However, the merit of breadth scores as an indication of institutional quality was not found to cross institution type, since big schools had consistently lower scores than small schools, and other differences were found across the four institution type categories. It is concluded that the breadth index as used here provides results congruent with some traditional indicators of educational quality, but is more appropriate and more revealing. (MSE)

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MEASURING THE QUALITY OF UNDERGRADUATE EDUCATION

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Over the past several years a set of scales purporting to measure the quality of effort students put into using the facilities and opportunities in the college setting that are intended to enhance their learning and development have been constructed (Pace, 1979, 1980). In the spring of 1979 and 1980, responses to the quality of effort measures were obtained from more than 9,000 undergraduates at thirty four-year colleges and universities. In the present paper, evidence is given to suggest that the breadth or scope of high quality effort may be a very good index for judging the quality of undergraduate education on the campus.

Because some knowledge about the measures and the data base is essential for understanding the results, the basic facts are as follows: 1) with two minor exceptions the quality of effort scales consist of ten-item checklists of activities to which students respond by indicating about how often during the current school year they have done each of the activities in the list; 2) the activities themselves require or presume different levels of effort and theoretically have different potentials for influencing learning and personal development; 3) the content of each scale is basically homogeneous and hierarchical, as in

a Guttman scale; 4) the score on each scale is the sum of weighted responses to the items in the scale, with the response "very often" given four points, "often" three points, "occasionally" two points, and "never" one point; 5) one can only get a high score on a scale by engaging with some frequency in the higher quality activities, and it takes more effort to engage in those activities than in the lower quality activities; 6) there are fourteen quality of effort scales, seven of them related to students use of major facilities (classroom, library, science laboratory, cultural facilities, student union, athletic and recreational facilities, residence unit), and seven related to various opportunities for association and experience (contact with faculty, experience in writing, breadth and depth of student acquaintances, activities related to self-understanding, involvement in clubs and organizations, topics of conversation among students, and level of information in student conversations); 7) coefficient Alpha reliabilities of the scales range from .79 to .90; 8) the quality of effort scales are the main part of a larger questionnaire entitled College Student Experiences, which also provides background information about the respondents and their status in college, ratings of characteristics of the college environment, a satisfaction with college index, and students estimates of how much they have gained or made progress toward various important educational goals.

Examples of activities are "made outlines from class notes or readings," "used the card catalogue to find what materials there were on some topic," "asked other people to read something you wrote to see if it was clear to them," "made an appointment to meet with a faculty member in his/her office." Examples of goals are "ability to think

analytically and logically," "writing clearly and effectively," "broadening your acquaintance and enjoyment of literature," "understanding yourself--your abilities, interests, and personality." There are eighteen goal statements in the questionnaire.

An index of the breadth or scope of high quality effort was derived from students scores on twelve of the effort scales. Two topics were not applicable to all students (campus residence and science laboratory); but the other twelve scales were applicable to all students at all institutions surveyed. Of these twelve scales, four were mainly concerned with what we may call academic/intellectual activities (course learning, library, faculty, and writing), four were primarily personal and interpersonal (personal experiences, student acquaintances, conversation topics, and conversation level), and four were primarily centered around group facilities and associations (student union, clubs and organizations, athletic and recreational facilities, and cultural facilities related to art, music, and theater). The breadth index is defined as the number of scales (different aspects of campus life) on which a student's score is above the median of some defined baseline group. This baseline could be the median at one's own institution, or the median of all student responses at all institutions. Of the thirty colleges and universities from which data had been obtained, twenty-four were selected to form a comparative or normative group, chosen because each of them had obtained replies from a good cross-section of undergraduates.

On this multi-institutional base, the students' breadth scores span the full range from 0 to 12. Some students invest above average

quality effort on all twelve of the topics and some students invest above average effort on none of the twelve topics. Table 1 shows this distribution.

Insert Table 1 about here

One-fourth (25 percent) of the students have a breadth score of 9 or higher; and about the same proportion (27 percent) have a breadth score of 3 or lower. The median breadth score is 6.4, almost exactly halfway between 0 and 12. Next, to illustrate that there are substantial differences in the breadth of high quality effort at different colleges, Table 2 shows the percent of students, at each of twenty-four institutions, who had a breadth score of 9 or higher.

Insert Table 2 about here

At school A, only 10 percent of the students had a breadth score of 9 or higher; at school X, 61 percent of the students had a breadth score of 9 or higher. The brackets show the location of various types (Carnegie, 1976) of institutions. For example, at the five CUCs (Comprehensive Universities and Colleges) there were typically 15 percent of the students with high breadth scores, and a range between the five CUCs from 10 percent to 18 percent. At the three RUs (Research Universities), there were typically 20 percent of the students with high breadth scores, and a range between the three RUs from 16 percent to 24 percent. Similar information is shown for Liberal Arts Type I (high academic selectivity) and Liberal Arts Type II (all others) colleges.

The differences in breadth scores at the four types of institutions are further documented as follows: the mean breadth score at Comprehensive Universities and Colleges is 4.8; at Research Universities it is 5.6; at Liberal Arts II it is 6.9; and at Liberal Arts I it is 7.5.

Within each of the four types of institutions, the relationships between breadth scores and various students characteristics are similar. For example, high breadth scores are found more frequently 1) among women than among men, 2) among younger students than older students, 3) among students who live in college housing or within walking distance of the campus than among those who live farther away and especially those who live at home, 4) among students whose major field is in the humanities or social sciences as opposed to those majoring in vocational fields such as business, education, or engineering, 5) among students who expect to continue education beyond the bachelors degree, 6) among students whose grades are B+ or higher compared to those whose grades are B- or lower, and 7) among students who spend forty hours a week or more on academic activities compared to students who spend thirty hours or less.

As to whether the breadth score is a good index of the quality of undergraduate education on the campus, the crucial evidence lies in the relationship between breadth scores and outcomes. Three pieces of this evidence are reported next.

First, the rank order correlation of the institutions between breadth of effort and breadth of outcomes is .80. Breadth of outcomes is the number of outcomes or objectives in which the institutions's score (percent of students reporting very much or quite a bit of progress)

is at or higher than the score for the composite of all institutions in the study. So, across institutions the breadth of high quality (above average) effort is clearly associated with the breadth of high quality (above average) outcomes--the broader the scope of effort the broader the range of outcomes.

The second piece of evidence is shown in Table 3.

Insert Table 3 about here

This compares, for the total sample of students, the progress toward various goals reported by those with low breadth scores and those with high breadth scores. On all of the objectives there is a substantial difference in reported attainment between low and high breadth students.

The third piece of evidence, in Table 4, shows relationships between outcomes and breadth at each of the four types of institutions.

Insert Table 4 about here

The table is read as follows: in the comprehensive colleges and universities students who are in the low third, middle third, and high third of that population with respect to gains or progress toward the group of objectives described as personal-interpersonal are sorted out and, for each of those thirds, the mean breadth score is shown in the table. The results clearly reveal that, for each of the four categories of outcomes, and in each of the four categories of institutions, attainment is related to breadth of effort. In some cases, students who have made

the greatest gains (high third) have invested high quality effort in twice as many aspects of college life compared with those who have made the least gains (low third).

Because there are large and consistent differences in the breadth scores between the big schools (research universities and comprehensive colleges and universities) and the small schools (liberal arts colleges I and II), I believe that the merit of the breadth score as an indication of the quality of undergraduate education on the campus does not extend equally across all types of schools. Almost without exception, the breadth scores at small schools are higher than the breadth scores at big schools. This finding is consistent with what one would expect from the research of Roger Barker and Paul Gump and others who have studied behavior in settings of different size (Barker & Gump, 1964) (Baird, 1969). In large settings it is inevitable that many people will be spectators rather than active participants. In small settings, if certain kinds of activities occur at all, a larger proportion of individuals will have to participate in them. Within small schools (all the liberal arts colleges) the breadth score seems to be a very good index of the quality of undergraduate education, or, more specifically, the quality and vitality of undergraduate experience at the college. Also, within the large schools the breadth score seems to be a useful index; for there are clear differences in outcomes between high breadth and low breadth groups.

Among the sixteen liberal arts colleges in this study there were large differences between them on the breadth of high quality student effort in using the facilities and opportunities for learning and

development. Beyond the relationship between breadth of effort and various self-reported estimates of gain or outcomes, there are a few relationships between these data and certain traditional indicators of quality that can be reported. From Table 2, it was shown that breadth of high quality effort was more frequent in LA Type I colleges than in LA Type II colleges. For most of these colleges, other information was obtained; and with the following results: in LA I colleges 86 percent of the freshmen returned as sophomores, compared with 76 percent in LA II colleges; in LA I colleges 66 percent of the entering students subsequently obtained a degree in four years, compared with 51 percent in LA II colleges; in LA I colleges the average high school grade point average of entering students was 3.4, compared with 2.9 in LA II colleges. So, retention, graduation, and the high school academic record of entrants differentiate Type I and Type II liberal arts colleges in the same direction as the breadth scores differentiate between them. Moreover, undergraduates at Type I schools, compared with those at Type II schools, rate their college environment as having a stronger emphasis on scholarly and intellectual development, and on the development of evaluative and critical competence. The differences noted above between Type I and Type II liberal arts colleges are also found between the RUs and the CUCs, with RUs resembling the Type I liberal arts colleges and CUCs resembling the Type II liberal arts colleges. The consistently large differences in the environmental characteristics of RUs and CUCs on the one hand, and liberal arts colleges on the other are in the general friendliness and supportiveness of interpersonal relationships--among students, between students and faculty, and between

students and administration--with the smaller schools ascribing a greater degree of friendliness and supportiveness to these relationships.

The breadth index, as illustrated in this paper, provides results that are congruent with some traditional indicators of educational quality; but it is a more appropriate and educationally more revealing indicator. The breadth score (and, of course, all the item responses that comprise it) offers an empirical definition of the quality with which students are taking advantage of the variety of resources and opportunities for learning and development on the campus. Given generally comparable opportunities for student initiative and involvement--small schools compared with other small schools, and big schools compared with other big schools--the breadth index is diagnostic, and perhaps more fully relevant than any other current measure of the quality of undergraduate education and experience.

TABLE 1

DISTRIBUTION OF BREADTH SCORES*
FOR THE TOTAL SAMPLE, N = 7853

Breadth Score	Percent	
12	3	
11	6	25%
10	7	
9	9	
8	9	
7	10	
6	10	
5	10	
4	9	
3	8	
2	8	27%
1	6	
0	5	
	100	

* A score of 12 meant that a student's quality of effort score was at or above the total sample median score on all twelve of the scales.

TABLE 2

PERCENT OF STUDENTS AT EACH COLLEGE WITH ABOVE AVERAGE EFFORT SCORES ON NINE OR MORE SCALES

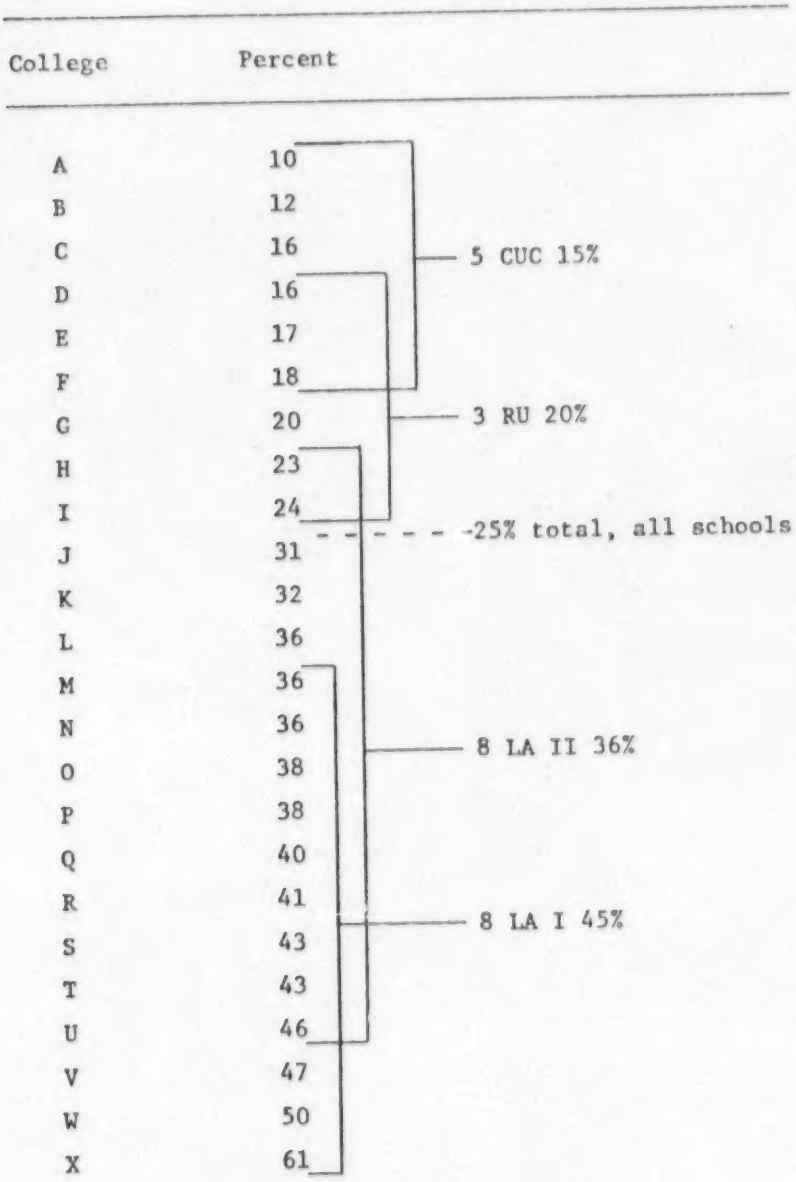

TABLE 3

RELATIONSHIPS BETWEEN BREADTH SCORES AND ATTAINMENT

Objectives	Percent of students reporting "quite a bit" or "very much" progress toward various objectives	
	Among students with low breadth scores (0-3)	Among students with high breadth scores (9-12)
Goals related to general education		
breadth of knowledge	52	80
art, music, theater	14	48
literature	14	55
writing	33	69
philosophies and cultures	37	78
Goals related to intellectual competence		
specialization	51	74
analytical thinking	50	78
ability to synthesize	53	87
ability to find information	61	91
Goals related to science		
understanding science and experimentation	27	41
understanding science and technology	28	42
quantitative skills	35	53
Goals related to personal and interpersonal understanding		
clarifying values	44	85
self-understanding	58	89
understanding others	54	89
function as a team member	30	66
develop good health habits and physical fitness	22	51

TABLE 4

MEAN BREADTH SCORES OF STUDENTS REPORTING HIGH, AVERAGE, AND LOW GAINS OR PROGRESS TOWARD THE ATTAINMENT OF VARIOUS OBJECTIVES

Gains, progress toward different outcomes	Mean breadth scores of students at: Comprehensive Colleges and Universities (N=2530)	Doctoral Universities (N=2237)	Liberal Arts II (N=1014)	Liberal Arts I (N=913)
Personal-Interpersonal Outcomes				
low third	2.8	4.0	5.3	6.3
middle third	4.6	5.2	6.4	7.1
high third	6.7	7.0	8.2	8.5
General Education Outcomes				
low third	3.2	3.7	5.7	5.5
middle third	4.6	5.2	6.3	7.0
high third	6.4	7.4	8.5	8.7
Academic-Intellectual Outcomes				
low third	3.2	4.1	5.4	6.1
middle third	4.5	5.3	6.7	7.4
high third	5.0	6.7	8.3	8.3
Science Outcomes				
low third	3.9	5.1	6.0	6.9
middle third	4.8	5.5	6.7	7.7
high third	5.7	5.9	7.7	7.6

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